

What is claimed is:

1. A telephony system comprising:
- a switch for analog signals, the switch being connected to a first network;
- a router for routing Internet Protocol packets, the router being connected to a
- 5 second network using Internet Protocol addressing; and
- a telephony gateway for converting analog signals into Internet Protocol packets and for converting Internet Protocol packets into analog signals, the telephony gateway being connected to both the switch and the router.
2. The telephony system of claim 1 wherein the first network is the Public Switched Telephone Network.
3. The telephony system of claim 1 wherein the analog signals are voice calls.
4. The telephony system of claim 1 wherein the telephony gateway also converts the analog signals into Real Time Protocol packets.
5. The telephony system of claim 1 wherein the switch includes line cards connected to a switch matrix.
- 20 6. The telephony system of claim 5 wherein the switch further includes trunk cards connected to the switch matrix.

7. The telephony system of claim 1 further comprising a signaling gateway connected to the router, the signaling gateway using an in-band signaling protocol for signaling the telephony gateway through the router.

5

8. The telephony system of claim 7 wherein the signaling gateway is also connected to an out-of-band signaling network, the signaling gateway having a translator for translating in-band signaling to out-of-band signaling and for translating out-of-band signaling to in-band signaling.

9. The telephony system of claim 1 wherein the second network is a voice network.

10. The telephony system of claim 1 further comprising a remote access server for converting analog data signals into Internet Protocol packets and for converting Internet Protocol packets into analog data signals, the remote access server being connected to both the switch and the router.

11. The telephony system of claim 1 wherein the switch is controlled by an Incumbent Local Exchange Carrier, and the telephony gateway and the router are controlled by a Competitive Local Exchange Carrier.

12. The telephony system of claim 1 wherein the switch, the telephony gateway, and the router are controlled by an Incumbent Local Exchange Carrier.

13. A telephony system comprising:
5 a switch for analog signals, the switch being connected to a first network;
a router for routing Internet Protocol packets, the router being connected to a
second network using Internet Protocol addressing; and
a remote access server for converting analog signals into Internet Protocol packets
and for converting Internet Protocol packets into analog signals, the remote access server being
10 connected to both the switch and the router.

14. The telephony system of claim 13 wherein the first network is the Public
Switched Telephone Network.

15. The telephony system of claim 13 wherein the analog signals are modem calls.

16. The telephony system of claim 13 wherein the switch includes line cards
connected to a switch matrix.

17. The telephony system of claim 16 wherein the switch further includes trunk cards
connected to the switch matrix.

18. The telephony system of claim 13 further comprising a signaling gateway connected to the router, the signaling gateway using an in-band signaling protocol for signaling the remote access server through the router.

5 19. The telephony system of claim 18 wherein the signaling gateway is also connected to an out-of-band signaling network, the signaling gateway having a translator for translating in-band signaling to out-of-band signaling and for translating out-of-band signaling to in-band signaling.

10 20. The telephony system of claim 13 wherein the second network is a data network.

21. The telephony system of claim 13 further comprising a telephony gateway for converting analog voice signals into Internet Protocol packets and for converting Internet Protocol packets into analog voice signals, the telephony gateway being connected to both the switch and the router.

22. The telephony system of claim 13 wherein the switch is controlled by an Incumbent Local Exchange Carrier, and the remote access sever and the router are controlled by a Competitive Local Exchange Carrier.

20 23. The telephony system of claim 13 wherein the switch, the remote access server, and the router are controlled by an Incumbent Local Exchange Carrier.

24. A telephony system comprising:
a switch for analog voice and data signals, the switch being connected to a first network;

5 a router for routing Internet Protocol packets, the router being connected to a second network using Internet Protocol addressing;

a telephony gateway for converting analog voice signals into Internet Protocol packets and for converting Internet Protocol packets into analog voice signals, the telephony gateway being connected to both the switch and the router; and

10 a remote access server for converting analog data signals into Internet Protocol packets and for converting Internet Protocol packets into analog data signals, the remote access server being connected to both the switch and the router.

15 25. The telephony system of claim 24 wherein the first network is the Public Switched Telephone Network.

20 26. The telephony system of claim 24 further comprising a signaling gateway connected to the router, the signaling gateway using an in-band signaling protocol for signaling one of the telephony gateway and the remote access server through the router.

27. The telephony system of claim 26 wherein the signaling gateway is also connected to an out-of-band signaling network, the signaling gateway having a translator for

translating in-band signaling to out-of-band signaling and for translating out-of-band signaling to in-band signaling.

28. The telephony system of claim 24 wherein the at least one network is one of a
5 data network and a voice network.

29. The telephony system of claim 24 wherein the switch is controlled by an Incumbent Local Exchange Carrier, and the router, the telephony gateway, and the remote access server are controlled by a Competitive Local Exchange Carrier.

30. The telephony system of claim 24 wherein the switch, the router, the telephony gateway, and the remote access server are controlled by an Incumbent Local Exchange Carrier.

31. A switch for a telephony system comprising:
a switch matrix capable of being connected to the Public Switched Telephone
Network;
at least one line rack with a plurality of line cards connected to the switch matrix;
at least one trunk rack with a plurality of trunk cards connected to the switch
matrix; and
20 a telephony gateway for converting analog voice signals into Internet Protocol packets and for converting Internet Protocol packets into analog voice signals, the telephony gateway being connected to the switch matrix.

32. The switch of claim 31 further comprising a remote access server for converting analog data signals into Internet Protocol packets and for converting Internet Protocol packets into analog data signals, the remote access server being connected to the switch matrix.

5

33. The switch of claim 32 further comprising a signaling gateway connected to the telephony gateway and the remote access server, the signaling gateway using an in-band signaling protocol for signaling the telephony gateway and the remote access server.

34. The switch of claim 33 wherein the signaling gateway is also capable of being connected to an out-of-band signaling network, and the signaling gateway has a translator for translating in-band signaling to out-of-band signaling and for translating out-of-band signaling to in-band signaling.

35. The switch of claim 31 further comprising a signaling gateway connected to the telephony gateway, the signaling gateway using an in-band signaling protocol for signaling the telephony gateway.

36. A method of transferring information within a telephony system comprising the steps of:

sending an analog signal to a switch connected to a first network;

5 sending the analog signal from the switch to one of a telephony gateway and a remote access server connected to the switch;

converting the analog signal into an Internet Protocol packet at one of the telephony gateway and the remote access server;

5 sending the Internet Protocol packet from one of the telephony gateway and the remote access server to a router connected to one of the telephony gateway and the remote access server; and

routing the Internet Protocol packet from the router to a second network using Internet Protocol addressing connected to the router.

37. The method of claim 36 wherein the analog signal is a voice call, and further comprising the step of sending the voice call to the telephony gateway for conversion into the IP packet.

38. The method of claim 37 wherein the second network is a voice network.

39. The method of claim 36 wherein the analog signal is a modem call, and further comprising the step of sending the modem call to the remote access server for conversion into the IP packet.

40. The method of claim 39 wherein the second network is a data network.

41. The method of claim 36 further comprising the step of recording billing and call information at a signaling gateway connected to the router.

42. The method of claim 36 wherein the first network is the Public Switched Telephone Network.

43. A method of transferring information within a telephony system comprising the steps of:

sending an Internet Protocol packet from a first network using Internet Protocol addressing to a router connected to the first network;

sending the Internet Protocol packet from the router to one of a telephony gateway and a remote access server connected to the router;

converting the Internet Protocol packet to an analog signal at one of the telephony gateway and the remote access server;

sending the analog signal from one of the telephony gateway and the remote access server to a switch connected to the one of the telephony gateway and the remote access server; and

sending an analog signal from the switch to a second network connected to the switch.

20

44. The method of claim 43 wherein the analog signal is a voice call, and further comprising the step of sending the voice call to the telephony gateway for conversion into the IP packet.

5 45. The method of claim 44 wherein the first network is a voice network.

46. The method of claim 43 wherein the analog signal is a modem call, and further comprising the step of sending the modem call to the remote access server for conversion into the IP packet.

47. The method of claim 46 wherein the first network is a data network.

48. The method of claim 43 further comprising the step of recording billing and call information at a signaling gateway connected to the router.

49. The method of claim 43 wherein the second network is the Public Switched Telephone Network.

50. A method of transferring information within a telephony system comprising the steps of:

sending an Internet Protocol packet from a first network using Internet Protocol
addressing to a router connected to the first network and a switch connected to a second network;
and

routing the Internet Protocol packet from the router to a third network using
5 Internet Protocol addressing connected to the router.

51. The method of claim 50 wherein the first and third networks are voice networks.

52. The method of claim 50 wherein the first and third networks are data networks.

53. The method of claim 50 further comprising the step of recording billing and call
information at a signaling gateway connected to the router.

54. The method of claim 50 wherein the second network is the Public Switched
Telephone Network.